## REMARKS/ARGUMENTS

Claims 1, 4, 5 and 9 have been amended. Claims 1-9 remain in this application.

### 35 U.S.C § 103 Rejections

Claims 1-9 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,911,818 to Baig in view of U.S. Patent No. 6,586,520 to Canorro.

Applicants respectfully assert that the rejection with respect to claims 1-9 is moot as a result of the amendments to independent claims 1 and 5. Specifically, Applicants have amended claims 1 and 5 to recite that

> latex is incorporated within the panel in an amount from about 0.01% to 0.97% by weight on a dry weight percent basis and forms an ultra thin, water-impermeable coating on the fibers within the panel such that water may flow through a cross section of the panel.

Support for this limitation is found in of paragraph [0012] of the specification.

Applicants' claimed range of latex is critical to achieving the characteristics of coating the fibers within the panel to avoid staining, and at the same time, allowing water to flow through the panel. The criticality of the amount of latex is illustrated in the examples of Applicants application.

Specifically, the first example beginning in paragraph [0037] uses, on dry weight % basis, 0.35% latex, and the second example beginning in paragraph [0040] uses, on a dry weight % basis, 0.5% latex. As described in each example, the respective amount of latex hinders the leaching out of staining agents from the fibers within the panel and allows water to enter and pass through the cross section of the board thereby avoiding the "framing effect"-type staining caused by a rusted grid. Applicants have also set forth a

comparative example in paragraph [0039] in which latex is used in an amount of 1% by weight of the dry solids. As described in paragraph [0039], upon using 1% latex

> water remained on the back surface of the panel and did not flow through the panel, thus running laterally over the panel edges. The panel was internally completely sealed to flow of water by the latex at [1% by weight of the dry solids] concentration.

The comparative example illustrates the criticality of applicants claimed range of dry weight percent latex in that as soon as one strays from Applicants' optimized range, i.e. above 0.97% latex, the unexpected simultaneous achievement of Applicants' claimed performance properties disappears.

In Table 1, beginning at column 3, line 38, Baig describes using latex in an amount of "0 to 10%" by weight, where the preferred percentage is "0%". As described by Baig at column 6, lines 31-36, "one of the problems with acoustical panels employing a starch binder is excessive sag." It is widely know in the art that starch is hydrophilic by nature. As a result, starch absorbs and retains water which causes sag. Baig describes at column 6, lines 28-30, using latex either in place of, or in combination with, starch. Here, Applicants submit, Baig is at the very least impliedly teaching, if not specifically teaching, that latex will reduce sag, or eliminate sag entirely. Thus, Baig confirms what is already understood by those skilled in the art, namely that latex is hydro<u>phobic</u> by nature and that incorporation of latex into the panel formulation <u>in any amount</u> will intuitively impart hydro<u>phobic</u> properties to a panel.[1]

The Examiner states in the Official Action that Canorro et al. show clearly that "it is notoriously well known in the art to facilitate the panel of [Baig] with latex coating of

[1] See also Canorro et al. at column 12, lines 27-28 defining "latex" as an aqueous dispersion of <u>water-insoluble</u> polymer.

discriminating amount in an attempt to impart resulting and desired properties to same panel as claimed."

Canorro et al. describe a coating composition which when coated onto a substrate imparts desired characteristics to the substrate. As stated at various points in Canorro et al., for example at column18, lines 54-58, "the coating compositions of the present invention provide . . .water and stain resistance [to a substrate] . . . as well as other properties, such as . . . resistance to aqueous liquids."[2]

As explained above, one type of staining is caused by water entering the panel which leaches out staining agents from the fibers of the panel. Canorro et al. avoid this type of staining by not allowing water to enter the board. In other words, Canorro et al.'s aqueous solution seals off the substrate in such a manner that the panel repels water. As previously explained herein, the problem which results from a ceiling panel which is completely repellent to water, such as Canorro et al.' panel, is that the water which is repelled will run laterally over the panel edges thereby rusting the grid and causing a second type of staining of the panel due to rusting of the grid. Staining of the edges of the panel due to a rusted grid has been called by the Applicants, the "picture framing effect".

Applicants latex concentration solves the problem of a water repellent panel by using an amount of latex which is small enough to allow wetting, i.e. allowing water to enter the board, but large enough to coat the fibers of the panel to avoid leaching out of staining agents from the constituents of the panel. Thus, Applicants' formulation avoids both the staining caused by the leaching out of the staining agents from the fibers and the

[2] See also at column 9, lines 31-41, Canorro et al. merely suggest that their aqueous composition will impart "sealing properties, stain resistance . . . and water resistance repellency."

staining caused by a rusted grid. In contrast, Canorro et al. teach optimizing the desired characteristics by increasing the latex concentration.

One of skill in the art would not be motivated to experiment with discriminating amounts of latex to achieve the now claimed desired characteristics, as such characteristics were unexpected in view of what is known about the properties which latex imparts to a substrate. Applicants submit, it would be counter-intuitive for one skilled in the art to achieve Applicants claimed characteristics from the use of latex, as oit is known that latex imparts hydrophobic properties, i.e. is resistant to or avoids wetting, to a substrate. Therefore, Canorro et al. provide no motivation to optimize the latex in Baig's disclosed range by using less latex.

Only when Applicants sought to avoid the "framing effect" caused by water repellency imparted by latex, was such small amount of latex found to impart hydrophilic properties to the panel. It is Applicants' optimization of the quantity of latex in the panel, namely "0.01% to 0.97% by weight on a dry weight percent basis", that coats the fibers to avoid the leaching out of staining agents from the fibers of the panel, and that allows water to enter the and flow through the cross section of the board to avoid staining caused by rusting of the grid. It therefore follows that Applicants' claimed latex range is not taught or suggested by the combination of references.

Moreover, Applicants submit that the critical range of latex, which provides a stain resistant and hydro<u>philic</u> panel, would not have been uncovered by routine experimentation in Baig's disclosed range. A particular parameter must first be recognized as a variable which achieves a recognized result before the optimization of ranges of the variable might be characterized as routine experimentation. As stated

above, latex is widely known to be hydrophobic by nature, and, thus, has not been recognized as a variable that could be optimized to achieve a hydrophilic, yet stain resistant substrate.

For the above reasons, Applicants submit that claims 1 and 5, and all claims which depend therefrom, should be found allowable. Applicants respectfully request that the Examiner withdrawal the 103(a) rejection.

Applicants submit that all the claims are believed to be in a condition for allowance. Reconsideration is respectfully requested.

Respectfully submitted,

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Date

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